

## AN INDEX TO THE INSECTS AND SPIDERS FEATURED ON AUDUBON'S BIRD PLATES<sup>1</sup>

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**ABSTRACT:** The title reveals the nature of this article. References are made to Audubon's bird plates reproduced by The Macmillan Company, 1937 and The American Heritage Company, 1966. In each case the birds, insects, insect injuries, and spiders are indicated.

This discussion is based on the insects and spiders featured on the 500 plates reproduced by The Mac Millan Co., 1937 and the 421 plates reproduced by the American Heritage Publishing Co., 1966. Although Audubon's Sketch Book, brought to light by Alice Ford illustrates many excellent insect and spider paintings by Audubon, few or none were used on the final bird plates. They are not included in the present discussion. Edwin Teale and Alice Ford have discussed Audubon's insects and other animals, however, some have been missed and the injuries by insects have not been considered. Their papers will compensate for the lack of illustrations in the present article.

Forty nine insects and 13 spiders are distinctly represented on Audubon's plates. These include 28 Lepidoptera, 14 Coleoptera, 7 Diptera, and 7 insects of miscellaneous orders. Eighteen objects, difficult to identify, may be insects or spiders. Not only the adult insects are featured but often the immature forms, eggs, larvae, pupae, and nymphs are represented. The inclusion of leaf miners, gall makers, work of boring insects and foliage feeders add many species to the list.

While most of the insects and spiders are well delineated, some are sketchy, represented in black and white and often small or minute, making specific identification difficult.

The birds are often associated with suitable backgrounds including leaves and flowers of many plants, insects, spiders and other animals. These were often executed by artists other than Audubon. George Lehman of Lancaster, Pennsylvania is responsible for many of the backgrounds. Maria Martin, a sister-in-law to

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John Bachman and later his wife, contributed many drawings of insects and spiders. Audubon's son, John, assisted in collecting specimens and made a few paintings of insects and spiders. His close friend and protege, Joseph Mason, also contributed sketches of flowers and plants.

In referring to Audubon's plates, the original numbers used by MacMillan Co., 1937, appear first, followed by those in parenthesis used by the American Heritage Co., 1966. The subject matter of the two sources may differ greatly, these differences are described in detail.

The only way to truly appreciate Audubon's bird plates is to view them in their entirety; the birds, their backgrounds, including trees, flowers, insects, and other animals. These usually reveal the habits of the birds. This is the reason for the index. Let us consider in detail the plates that feature insects and spiders.

#### A SUMMARY OF THE INSECT AND SPIDERS INVOLVED

- \*2(22)    YELLOW-BILLED CUCKOO. A pair of birds with leaves and fruit of pawpaw is featured. The leaves show some injury by a caterpillar. The bird to the right has a life like swallow-tail butterfly *Papilio glaucus* in its mouth.
  
- 3(39)    PROTHONOTARY WARBLER. On plate (39) a four-winged green insect with an elongate body, probably a neuropteran, is faintly represented below in the background. No insect occurs on plate 3.
  
- 5(6)    CANADA WARBLER. No insect is represented on either plate, however, considerable injury by a caterpillar occurs on the foliage of Magnolia.
  
- 10(58)    AMERICAN PIPIT (WATER PIPIT). The birds are attracted by a small insect in flight, apparently a hymenopteran.
  
- 14(260)    PRARIE WARBLER. A coccinellid beetle is represented on the sedge.
  
- 15(10)    PARULA WARBLER. A small looper, Geometridae, is feeding on the edge of a leaf of red iris.

\*First number from Macmillan 1937, second number in parenthesis from American Heritage, 1966.

- 18(240) BEWICK'S WREN. There seems to be a cluster of eggs, probably Tabanidae, on the upper leaves of winged elm.
- 19(200) LOUISIANA WATER THRUSH. A small spider occurs on the edge of the leaf of the jack-in-the-pulpit, which is attracting the attention of one of the birds.
- 20(230) BLUE-WINGED WARBLER. The tip of the leaf below the upper bird shows a minute indistinguishable insect.
- 25(256) SONG SPARROW. A small spider is dropping from a silken thread attached to a leaf of hackberry, which is minute in (256).
- 26(223) CAROLINA PARAKEET. The Cocklebur seems to be draped with the cocoons of the Promethia moth.
- 27(267) RED-HEADED WOODPECKER. The lower bird is offering the larva of the milkweed butterfly, *Danaus plexippus* to a young bird. Also the excavations of a wood-boring Coleoptera are evident.
- 32(15) BLACK-BILLED CUCKOO. The birds are featured with Magnolia, the leaves of which show feeding by a caterpillar. The bee fly *Anthrax tigrinus* (DeG.) is one of the largest of the Bombyliidae and known from Florida, Kansas, Pennsylvania and California.
- 34(379) WORM-EATING WARBLER. A spider which is shown on the berries of poke weed has been identified by specialists as the black widow. If so, it is entirely out of place. The leaves of the plant show considerable feeding by a caterpillar.
- 35(256) YELLOW WARBLER. A fly *Lucilia* sp., is at the end of a leaflet of coffee wood.
- 37(264) FLICKER (YELLOW-SHAFTED FLICKER). The lower bird has the larva of a wood-borer in its mouth.
- 38(90) KENTUCKY WARBLER. A spider, faintly executed, is suspended on a silken thread attached to the umbrella tree (magnolia). This is more clearly illustrated in 38.
- 39(298) TUFTED TITMOUSE. The upper bird is pecking at some object, probably an insect pupa on the bark of white pine.
- 40(365) AMERICAN REDSTART. A nest of a species of *Polistes* with six wasps is figured. The paper nest is attached to hop horn-beam. The leaves, especially in 40, show cox-comb aphid galls.

- 44(269) SUMMER TANGER. The male on wild grape is swallowing a June beetle, *Phyllophaga*.
- 46(188) BARRED OWL. Plate 46 has a squirrel sitting on a limb. The squirrel is absent in (188). The wood shows the engravings of a scolytid beetle.
- 48(415) CERULEAN WARBLER. A jumping spider, *Attidae*, is shown on the edge of a yellow leaf of *Ilex cassine*. 48 figures a second bird below attracted by a small flying insect. The second bird is missing on (415) and there is no flying insect.
- 58(344) HERMIT THRUSH. The two birds are resting on bearberry. A small insect to the right of the upper bird is probably a neuropteran.
- 63(77) WHITE-EYED VIREO. A spider *Gasterocantha cancriformis* is suspended on a silken thread from flowering cranberry.
- 66(181) IVORY-BILLED WOODPECKER. A spider is figured on a portion of the limb devoid of bark, the engravings of a scolytid beetle are also shown.
- 73(279) WOOD THRUSH. The lower bird is reaching for an insect, apparently a homopteran at the end of the leaf petiole.
- 74(316) INDIGO BUNTING. On (316) the golden garden spider *Miranda aurantia* is featured. The spider is missing on 74.
- 79(100) KING BIRD. A pair on a poplar tree, the lower bird has seized a bumblebee, not a honeybee as mentioned for (100).
- 82(218) WHIP-POOR-WILL. Three insects are figured with a branch of oak. The larva of a sphinx moth *Sphexcodina abbotti* is resting on a leaf, adults of *Samia cecropia* and *Automeris io* are also figured in minute detail.
- 83(4) HOUSE WREN. One parent is feeding a spider to a young bird.
- 87(13) FLORIDA OR SCRUB JAY. No insect, but considerable foliage injury by some caterpillar.
- 96(53) MAGPIE JAY. Perched on a dead limb entwined with poison ivy, the upper bird is pecking at an object? a nut or the body of a large spider. It is interesting to note that this plate was used on the U.S. Air Mail stamp, the Columbia Jay, C71, 1967.
- 103(46) CANADA WARBLER. Great laurel shows considerable insect feeding on the leaves. A tiny insect to the right at rest and one to

the left, flying, both in black and white, probably Neuroptera. These insects are absent on (46).

- 107(24) GRAY JAY. The nest of the white-faced hornet *Vespula maculifrons* is attached to a white oak branch. This association may reveal the carrion-feeding habits of this bird. The color of the leaves indicate fall, the time when the colonies usually die and the dead insects might attract the birds.
- 108(213) FOX SPARROW. The wing of a saturniid moth seems to be tucked beneath dead leaves in front of the left bird, pronounced in (213) but not in 108.
- 109(246) SAVANNAH SPARROW. Two straws, cut by the wheat joint worm, *Cephus tabidus* (Fab.), appear in the grass below.
- 111(208) PILEATED WOODPECKER. Associated with fox grape, the upper bird with the larva of a wood-boring beetle in its mouth.
- 113(342) EASTERN BLUE BIRD (AZURE BLUE BIRD). The male is offering the female a tussock moth larva.
- 117(384) MISSISSIPPI KITE. 117 shows two birds, a decapitated beetle in the mouth of upper one, (384) shows one bird with beetle in its mouth.
- 118(203) WARBLING VIREO. A leaf of Magnolia to the right center distinctly shows the work of the leaf-cutting bee *Megachile* sp.
- 119(85) YELLOW-THROATED VIREO. One bird is reaching for a wasp *Gorytes* (= *Elis*) *quinquecinctus* on Hydrangea.
- 121(60) SNOWY OWL. The stump shows borings by the larva of a Coleoptera.
- 124(378) WILSON'S WARBLER. No insect is shown however the leaves of *Chelone glabra* shows injury by a sawfly larva. This species, to my knowledge, has never been identified. The conspicuous black and white larvae are common on this plant.
- 131(50) ROBIN. The robin to the left, on chestnut oak, is feeding a caterpillar of the tussock moth to its young. The caterpillar on (50) seems to be a different species than on 131.
- 134(250) BLACKBURNIAN WARBLER. 134 shows, very indistinctly, a lady beetle, Coccinellid, on the tip of one of the seeds of mountain maple. This does not appear on (250).

- 137(243) YELLOW-BREASTED CHAT. The bird at the edge of the nest is feeding its young a caterpillar, only two birds appear in the air. (243) shows three birds in the air.
- 140(211) PINE WARBLER. A tiny morsel on one of the needles of loblolly pine is attracting the attention of both birds.
- 142(184) SPARROW HAWK. A small moth of the family Ageriidae occurs in the lower right background. No insect on (184), only injury to leaves by a caterpillar.
- 143(356) OVEN BIRD. A bee or fly is indicated in the right background. No insect on (356).
- 144(408) ACADIAN FLY CATCHER. A moth is represented in the upper left background. No insect on (408).
- 147(351) NIGHT HAWK. Two beetles shown in flight, the upper one the spotted pelidnota, *Pelidnota punctata*, the lower one apparently another scarab beetle.
- 150(180) RED-EYED VIREO. An orb-weaving spider is figured with web attached to a branch on honey locust. Although identified as *Phidippus* by specialists, this spider does not spin an orb web.
- 159(398) CARDINAL. No insect is featured but the leaves of choke cherry show injury by a caterpillar.
- 160(377) BLACK-CAPPED (CAROLINA) CHICKADEE. What appears to be the cocoon of *Telea polyphemus* is attached to a branch of Rattan vine.
- 167(135) KEY-WEST QUAIL-DOVE. A dead insect is figured on the upper center leaf of morning glory.
- 183(236) GOLDEN-CROWNED KINGLET. A minute insect with two wings and long tails, apparently a mayfly, is figured. (236) shows no insect.
- 185(419) BLACKMAN'S WARBLER. The foliage of *Franklinia* is rather severely eaten by a caterpillar (419) shows a tiny speck, an insect? in front of the upper bird.
- 187(131) BOAT-TAILED GRACKLE. A pair of birds on live oak. No insect is featured but considerable insect feeding is shown on the leaves.
- 192(173) NORTHERN SHRIKE. A tiny long-horned grasshopper occurs in front of the middle bird. No grasshopper on (173).

- 195(416) RUBY-CROWNED KINGLET. One leaf of sheep laurel apparently figures a leafminer, also injury by a caterpillar on another leaf.
- 198(153) SWANSON'S WARBLER. Two butterflies *Precis lavinia* above, *Eumaeus atala* below, both associated with flame azalea and quite accurately represented.
- 201(94) CANADA GOOSE. One leaflet of the sedge appears to have a colony of aphids, questionably identified.
- 205(338) VIRGINIA RAIL. One bird is eyeing a wheel bug *Ariilus cristatus* in the bend of a grass leaf.
- 210(339) LEAST BITTERN. On (339) two birds are investigating what appears to be a mass of eggs, this does not appear on 210.
- 227(187) PINTAIL. On (187) the birds are attracted by a noctuid moth in flight, on 227 the moth is replaced by a species on Diptera.
- 233(292) SORA. Apparently a larva of some sort is figured in a bent leaf. On (292) the same insect is featured but the grass is drawn differently.
- 249(56) RED-SHOULDERED HAWK. Although many plates show birds looking for insects, the lower bird on this plate, is obviously searching for insects in the spanish moss on white oak. Entomologists frequently search for insects in such locations.
- 301(238) CANVAS BACK. The bird to the left on (238) is eyeing some creature, spider? No spider figured on 301.
- 303(329) UPLAND PLOVER. Two birds are in pursuit of an ichneumon fly.
- 318(270) AMERICAN AVOCET. 318 a tiny insect on the ground in front of the bird. No insect on (270), instead a snail.
- 327(287) SHOVELLER. 327 A pair eyeing a green scarab beetle on leaf above. The insect on (287) is replaced by the caterpillar of a tussock moth.
- 333(78) GREEN HERON. The bird to the left is eyeing a luna moth on an unidentified plant.
- 352(239) WHITE-TAILED KITE. The bird above is pursuing a scarab beetle, well drawn but not in flying position. The beetle is lacking on 352.

- 354(370) TANAGERS. No insect featured, the leaves of red-bay are severely injured by the larvae of *Urochus parvulus*, a species of Hyponomeutidae common in Florida.
- 355(345) SEASIDE SPARROW. Two butterflies *Anartia jatrophae* are featured, one flying, the other resting. Both, the work of Maria Martin, are beautifully illustrated.
- 359(288) FLY CATCHERS. Three different species on the branch of the umbrella tree. Two birds at the top viewing a sarcophagid fly on the wing. Also two magpie moths *Pseudohazis* sp. are featured.
- 373(220) EVENING AND BLACK-HEADED GROSBILLS. The hop merchant *Polygonia comma*, by Maria Martin, is featured but missing on (220). The arrangement of the birds are somewhat different on the two plates.
- 383(390) LONG-EARED OWL. 383 No insect, (390) a minute insect in flight at left, winged with long tails, probably a mayfly.
- 393(186) WARBLERS AND BLUE BIRDS. The two plates are very different. Both figure strawberry shrub. On 393 there is 1 warbler and 4 blue birds, (186) shows 11 birds including 4 blue birds. Both plates figure a coleopteran, *Brachyrhinus* probably *sulcatus* (Fab.) on one of the branches.
- 394(359) CHESTNUT-COLLARED LONGSPUR. The two plates are very different. The background of 394 is detailed with a spider dropping on a silken thread from the flower of Bergamot. (359) has no background and no spider.
- 375(360) RED POLL. A sphinx larva upper lefthand corner.
- 399(327) MACGILLVRAV'S WARBLER. The two plates are very different. No insect on either plate. (327) shows considerable insect injury. 399 shows no insect injury.
- 406(7) TRUMPETER SWAN. The two plates are very different, 406 has detailed water and sky; a *Catocala* moth is drifting in the water. In (7), the background is entirely blue and no insect is figured.
- 410(210) GULL-BILLED TERN. 410 has a small winged insect, Neuroptera, *Chauliodes* in front of the tern. No insect is figured on (210).
- 413(142) CALIFORNIA (VALLEY) QUAIL. Both show a spider in front of the left bird. 413 has a distinct background, (142) has no background.



- 416(333) WOODPECKERS. The two plates differ in the arrangement of the birds, especially in the upper right hand corner. No insect is figured on 416, the upper red-bellied woodpecker on (333) is after the pupa of a lepidoptera exposed by the broken branch.
- 437(204) VIOLET-GREEN SWALLOW. Two birds on 437 after a small insect in flight, probably a neuropteran. On (204) the two swallows are in approximately the same position at the top of the plate, below the three bank swallows but no insect.
- 438(288) ARKANSAS (WESTERN) KING BIRD. 438 shows a pair with a moth *Pseudohazis* sp. in the background. This is the same as the lower right hand portion of (288).
- 450(288) SAY'S PHOEBE. A pair of birds on the branch of the Magnolia tree, which are attracted by a tabanid fly above. (288) shows the pair of phoebes together with two western king birds, the scissor-tailed flycatcher and two moths, *Pseudohazis* sp. The 2 moths are not figured on 450.
- 462(327) CAPE MAY WARBLER. 462 is the lower left hand portion of (327). No insect is figured on either plate but considerable insect injury occurs on water oak.
- 464 CHESTNUT-COLLARED LONGSPUR. Similar to the right hand portion of 394, shows a spider dropping from a silken thread attached to the flower of Bergamot.
- 465(186) MOUNTAIN BLUE BIRDS. Plate 465 shows a pair viewing a beetle above. (186) figures the same pair in a slightly different position on the lower right hand side of the plate with 8 other birds, the blue birds are viewing two beetles on a branch, a rynchophoran and a green chrysomelid.
- 466(186) WESTERN BLUE BIRDS. 466 shows a small beetle, a coccinellid on a leaf petiole below the lower bird. The same pair is represented on the lower left hand part of the plate (186) but no insect is shown.
- 471 NORTHERN WATER THRUSH. The birds are associated with jack-in-the-pulpit. A very small insect seems to be poorly indicated on one of the lower leaves.
- 472 LARK SPARROW. A single bird eyeing a small insect in front of its bill.

- 478      ROUGH-WINGED SWALLOW. A pair of birds are flying after a moth, apparently a pyralid, also on the wing.
- 482      MORTON'S FINCH. A single bird on an elm branch. No insect is shown however one of the leaves show coxcomb galls produced by insects which are common on elm.

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- Teale, Edwin Way 1947. Audubon's insects. Audubon Magazine 49(6) 313-331.

### The Entomologist's Library

This section contains titles of books, monographs, and articles received by the editor that may be of special interest to entomologists and biologists. A brief statement of contents and items of interest are noted. Brief analytical reviews may be submitted for possible publication. All correspondence for this section should be addressed to the editor.

#### BOOK REVIEW

**MODERN CLASSIFICATION OF INSECTS** by M. S. Mani, 1974. Publisher: Satish Book Enterprise, Moti Katra: Agra - 282003, India. 331 pages with 658 simple, diagrammatic, line-drawing figures. RS 40.00

It is difficult to understand, especially in this modern era of well developed taxonomic entomology, why and how any one individual would take upon himself the task of developing and presenting keys to the identification of all of the families in all of the recognized orders of insects. Yet, this is exactly what the author presents in his Modern Classification system. He indicates this is based on a series of identification charts prepared by him for the use of his students in the School of Entomology, St. Johns College, Agra, India, over the past twenty years.